

Chapter 3 Review

For all problems you are expected to show all your work. If you use any equations, I expect to see the general form of the equation with all variables defined.

- 1) Express 75° in radians.
- 2) Express $7\pi/11$ in degrees.
- 3) Find the length of an arc intercepted by a central angle of $3\pi/4$ if the radius of the circle is 20 inches. Show your steps, including any equations you used.
- 4) A CD rotates at 200 rpm when reading at the edge of the CD. The radius of a CD is 6cm.
 - a) Find the linear speed of the object in cm per second.
 - b) Find the angular speed of the object in radians per second.
- 5) A bike has a front sprocket with a radius of 5 inches and a back sprocket of 2 inches. The back sprocket drives a wheel with a radius of 13 inches. If I can pedal at 90 revolutions a minute,
 - a) Find the angular speed of the big and small sprocket.
 - b) Find the linear speed of a point on the edge the tire in inches per second.
 - c) Find the speed in miles per hour.
- 6) Recreate the unit circle. Include both the radian and degree measures and exact coordinates for multiples of 30° , 45° , 60° , and 90° .

“Speed” Test

Find the value of each expression as an exact answer. Rationalize and reduce where applicable. Do NOT use a calculator. You will have 5 minutes to complete this section. (½ point each)

1) $\cos(120^\circ)$

2) $\cos(45^\circ)$

3) $\sin(5\pi/4)$

4) $\sin(\pi/3)$

5) $\cos(\pi/6)$

6) $\tan(3\pi/4)$

7) $\cos(330^\circ)$

8) $\tan(\pi)$

9) $\sin(60^\circ)$

10) $\sin(180^\circ)$

Answers:

- 1) $5\pi/12$ radians or about 1.31 radians
- 2) 114.55°
- 3) 15π or about 47.12cm
- 4) a) 40π or about 125.66 cm/sec
b) $20\pi/3$ or about 20.94 radians/second
- 5) a) $W_B = 3\pi$ $W_S = 15\pi/2$
b) $195\pi/2$ inches per second
c) About 17.4 miles per hour
- 6) see page 123 in your book

Speed Test

- 1) $-1/2$
- 2) $\sqrt{2}/2$
- 3) $-\sqrt{2}/2$
- 4) $\sqrt{3}/2$
- 5) $\sqrt{3}/2$
- 6) -1
- 7) $\sqrt{3}/2$
- 8) 0
- 9) $\sqrt{3}/2$
- 10) 0